

BIFUNCTIONAL LAYERED PHOTOCATALYST/THERMOCATALYST FOR IMPROVING INDOOR AIR QUALITY

ABSTRACT OF THE DISCLOSURE

A photocatalytic/thermocatalytic coating includes an inner layer of metal/titanium dioxide or metal oxide/titanium dioxide that is applied on a honeycomb and an outer layer of titanium dioxide or metal oxide doped titanium dioxide applied on the inner layer. The inner layer of can be gold/titanium dioxide, platinum/titanium dioxide, or manganese oxide/titanium dioxide. The outer layer of titanium dioxide or metal oxide doped titanium dioxide oxides volatile organic compounds to carbon dioxide, water, and other substances. As the outer layer is thin and porous, the contaminants in the air can diffuse through the outer layer and adsorb onto the inner layer. When photons of the ultraviolet light are absorbed by the coating, reactive hydroxyl radicals are formed that oxidize the contaminant to produce water, carbon dioxide, and other substances.

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